

ACCESSION #: 9904060442

NON-PUBLIC?: N

LICENSEE EVENT REPORT (LER)

FACILITY NAME: SALEM GENERATING STATION UNIT 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000272

TITLE: REACTOR SCRAM AS A RESULT OF TURBINE TRIP

EVENT DATE: 02/28/99 LER #: 99-001-00 REPORT DATE: 03/29/99

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 60

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: John C. Nagle TELEPHONE: (609) 339-3171

Senior Licensing Engineer

COMPONENT FAILURE DESCRIPTION:

CAUSE: SYSTEM: COMPONENT: MANUFACTURER:

REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 1:38 AM, on February 28, 1999, the Salem Unit 1 Reactor was automatically shut down due to a Low Oil Pressure Trip of the Main Turbine. The unit was operating at 60% power prior to the shutdown and was being maintained at this power level to allow maintenance troubleshooting activities. Preparations were also being made to allow maintenance to repair a leaking Main Turbine Lube Oil Cooler. While adjusting the cooler isolation valve, the operators inadvertently positioned the valve off of its closed seat, allowing oil from the in service cooler to enter the partially drained out-of-service

cooler. This diverted flow caused a momentary drop in the turbine oil pressure and resulted in the automatic shutdown of the Main Turbine and Reactor. A root cause investigation determined that the cause of this event was personnel error.

This event is being reported pursuant to 50.73(a)(2)(iv) Licensees shall report "any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor m RPS ."

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PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor

(Main Turbine Lube Oil Cooler Swap Over Valve) {LL/ISV}* _/

* _/ Energy Industry Identification System (EIIS) codes and component

function identifier codes appear as {SS/CCC} in the text.

CONDITIONS PRIOR TO OCCURRENCE

The unit was operating at 60% power prior to the shutdown and was being maintained at this power level to allow maintenance troubleshooting to be performed on the 12 Steam Generator Feed Pump. Preparations were also being made to allow maintenance to repair a leaking Main Turbine Lube Oil Cooler.

DESCRIPTION OF OCCURRENCE

At 1:38 AM, on February 28, 1999, the Salem Unit 1 Reactor was automatically shutdown due to a Turbine Trip. The operators were adjusting the position of a Schutte and Koerting six way valve {LL/ISV} on the main turbine lube oil system. This valve is used to select between the two available coolers and also acts as an isolation valve for the out-of-service cooler. Preparation were being made to perform maintenance

on the out-of-service oil cooler. Due to excess leakage into the cooler attempts were being made to more tightly seat the TL45 valve. While adjusting the isolation valve, the operators positioned the valve partially off of its closed seat, allowing oil from the in-service cooler to enter the partially drained out-of-service cooler. This diverted flow caused a momentary drop in the turbine oil pressure and resulted in the automatic shutdown of the Main Turbine. The turbine trip caused the Reactor to trip, as designed.

The operators responded to the automatic shutdown as directed by the plant's Emergency Operating Procedures and the unit was stabilized and placed in a shutdown condition without incident.

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CAUSE OF OCCURRENCE

The cause of the shutdown was operator error. The error was attributed to mis-operation of the cooler swap-over valve. Operation of this valve is an infrequent occurrence. The operators did not know that their attempts to more tightly close the valve would result in the valve being partially moved off of the closed seat. A 4-hour report was made to the NRC as required by the plant's Emergency Classification Guide and 10CFR50.72(b)(2)(ii).

The event investigation has determined that there was a broad lack of awareness of the precise design and operation of this unique valve. The valve is equipped with two handwheels mounted one behind the other on the

same axis. The outer handwheel selects the cooler and the inner handwheel seats the valve. Prior to this event personnel believed that the inner handwheel locked and unlocked the valve position. In fact, the inner handwheel raised and lowered the valve plug (a tapered cylinder) thus seating and unseating the valve

PRIOR SIMILAR OCCURRENCES

A review of 1997 and 1998 Licensee Event Reports and Inspection Reports for Salem Units 1 and 2 did not identify any incidents where lack of knowledge of equipment design features resulted in a significant plant transient.

SAFETY CONSEQUENCES AND IMPLICATIONS

Although the turbine trip and attendant reactor shutdown have minimal safety consequences, it is not desirable to unnecessarily challenge these systems.

All systems and safety features performed as designed and the unit safely shut down.

CORRECTIVE ACTIONS

Lesson plans have been revised to explicitly demonstrate the manner in which this valve functions. Operating Procedures have been revised to address the proper operation of the valve. Lessons Learned will be provided to the operating crews prior to the end of the second quarter (June 30, 1999).

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PSEG

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Nuclear Business Unit

LR-N990146

Regional Administrator

U.S. Nuclear Regulatory Commission

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Gentlemen:

LICENSEE EVENT REPORT 272/99-001-00

SALEM GENERATING STATION - UNIT 1

FACILITY OPERATING LICENSE NO DPR 70

DOCKET NO. 50-272

This Licensee Event Report entitled "REACTOR SCRAM AS A RESULT OF
TURBINE

TRIP" is being submitted in accordance with the criteria of

10CFR50.73(a)(2)(iv)

Sincerely

David F. Garchow

General Manager

Salem Operations

Attachment

/JCN

/C U.S. Nuclear Regulatory Commission

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